



Castilleja linariifolia

Castilleja

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Desert Yellowhead - One Decade Later

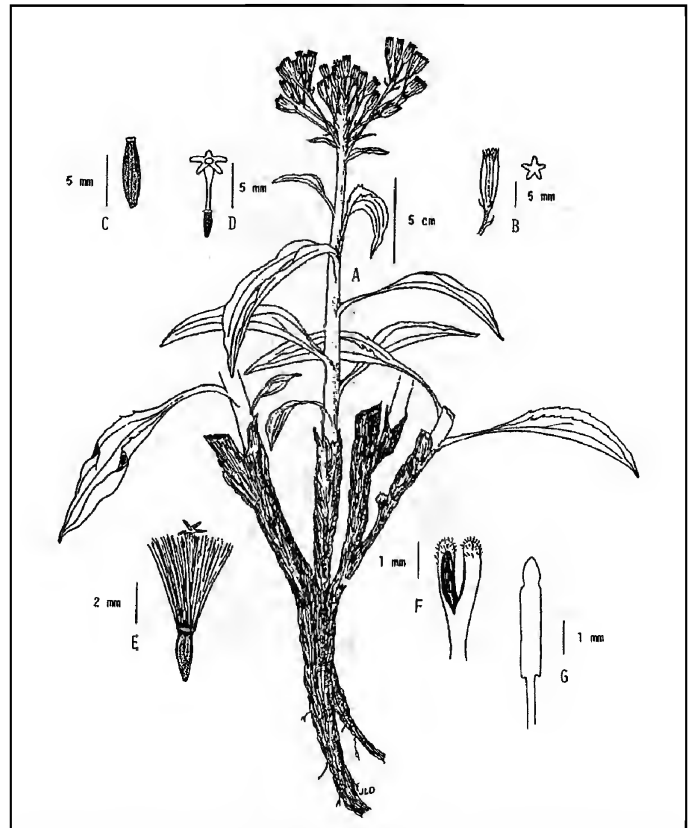
By Bonnie Heidel

Every plant has a story and some have tomes, if only we could read them start-to-finish! The Desert yellowhead (*Yermo xanthocephalus*) is the only federally listed plant that is endemic to Wyoming. It was discovered and described by Robert Dorn (Dorn 1991, 2006).

Desert yellowhead was listed as Threatened ten years ago (Fish & Wildlife Service 2002) and critical habitat was designated at the one known site not long afterward (Fish & Wildlife Service 2004). More recently, mining developments in the vicinity have lead to a 20-year mineral withdrawal and road closures by the land-managing agency, Bureau of Land Management (BLM 2008).

In 2004, a nine-year monitoring saga to annually census the entire population of Desert yellowhead was completed by Richard and Beverly Scott (2009). The monitoring study represented the most sophisticated plant monitoring project in the state and one of the longest.

In 2008, the Service started work on a recovery outline for Desert yellowhead, and



Above: Desert yellowhead (*Yermo xanthocephalus*) by Jane Dorn. From Dorn (1991). Reprinted with permission from Madroño (California Botanical Society).

completed it two years later (Fish & Wildlife Service 2010). Subsequently, the Service began to compile information since the time of listing, called a 5-year review. It was completed and posted this fall (Fish & Wildlife Service 2012).

These reviews revived questions about species' habitat requirements and survey completeness, first framed in the species' status report (Fertig 1995), and echoed in the first potential distribution model that was tested using draft versions (Heidel 2002).

In 2010, BLM supported new surveys for Desert yellowhead that used three approaches. First, the survey routes taken by (Cont. p. 9)

WYNPS News

Time to Renew! The number after your name on the newsletter mailing label indicates the last paid year (e.g., "John Doe 12" means you paid through 2012). The annual membership year is the calendar year. Use the enclosed form to renew and to vote in WYNPS friendly elections!

...Interested in what's happening around Sublette and Teton counties? Check off chapter membership to get chapter news sent directly to you and support local events for an added \$5.

New Members: Please welcome the following new members to WYNPS: Meta Dittmer, Alpine; Loretta Scott, Jackson; Amber Robbins, Pinedale; Jim & Laurie Latta, Pinedale.

Scholarship/Grant Announcement: See the enclosed announcement, also posted on-line. Submittals can be mailed or electronic, due February 15.

Wyoming Native Plant Society
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WYNPS Board – 2012

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Treasurer's Report: Balance as of 30 November:
Scholarship = \$1,905; General \$4704.42; Total = \$6609.42.

Contributors to this Issue: Mark Andersen, Ann Boelter, Rachel Daluge, Robert Dorn, Bonnie Heidel, Bernadette Kuhn, Jennifer Lyman, Joe Stevens, Travis Talbot and Amy Taylor.



Message from the President

Solstice Greetings! As 2012 draws to a close, I reflect on my past two years on the WYNPS Board and sharing botanical kinship at annual meetings in the Bighorns (2011 – WYNPS 30 Year Anniversary!) and in the Laramie area (2012 – hooray penstemons!). We established a new newsletter logo, a new website, and a Facebook page (have you 'liked' us yet?). Our scholarship scope expanded to include small grants for educational projects. Our flyers on statewide wildflower hikes are a hit. On the conservation front, we commented on the proposed draft Shoshone National Forest plan, highlighting the importance of proposed Research Natural Areas that have been on the WYNPS radar for decades. And a new chapter was formed: Welcome Sublette Chapter! Many thanks to my fellow Board members, newsletter editor, webmaster, and YOU who made it all possible!

Although my Board term will end soon, my support and great appreciation for WYNPS will not. If you find yourself in my neck-of-the-woods, join the Teton chapter for a plant walk or program. For now, I'm off to search for our Charlie Brown Christmas tree (most likely an elk-rubbed Douglas-fir which won't survive the winter) and begin drafting my 2013 botanical resolutions. All the best to you and yours this season!

~Amy Taylor

The next newsletter deadline is Feb. 10. Articles, announcements, and ideas are always welcome.

Editor: Bonnie Heidel (bheidel@uwyo.edu)
Webmaster: Melanie Arnett (arnett@uwyo.edu)
Sublette Chapter: Karen Clause, President; Julie Kraft, Treasurer
Teton Chapter: Amy Taylor, Treasurer
Bighorn Native Plant Society: P.O. Box 21, Big Horn, WY 82833 (Jean Daly, Treasurer)

Botanist's Bookshelf –

Holmgren, Noel H., Patricia K. Holmgren, James L. Reveal, and Collaborators. 2012. **Intermountain Flora**, Volume Two, Part A. The New York Botanical Garden Press, Bronx, NY. 731 pp. [ISBN 978-0-89327-520-4] \$150 + shipping.

Review by Robert Dorn

A monumental project is finally finished. It has taken 40 years from the publication of the first volume of Intermountain Flora in 1972 to the publication of the last in 2012. The project has actually been in the making for some 70 years from its first conception by Bassett Maguire before World War II. Maguire withdrew early from the project due to other commitments. He passed it on to two of his students, Arthur Holmgren and Arthur Cronquist, authors of the first volume, neither of whom lived to see the project completed. The other two authors of the first volume, Noel Holmgren and James Reveal, both students of Arthur Holmgren, have seen it to completion. A later author, Patricia Holmgren, was acknowledged in the first volume for "invaluable aid in proof reading," and has continued admirably in that capacity, a job that is tedious, boring, and perhaps the least desirable job of any project. Her careful work is evident in all of the volumes including the authoring or co-authoring of some of the families.

Science has a tendency to advance so rapidly that necessary basic research gets left behind. This project fills a huge basic research void for the Intermountain region which includes Utah, nearly all of Nevada, and parts of California, Oregon, Idaho, Wyoming, and Arizona.

The current and last volume, Volume Two, Part A, is the largest volume of the eight volume set with 731 pages. Over ¼ of the book is taken up by a single family, Polygonaceae, authored by James Reveal and including the largest genus in the Intermountain flora, *Eriogonum*, with 121 species. Other important families include Ranunculaceae, Caryophyllaceae, and Chenopodiaceae authored by Noel and Patricia Holmgren, and Cactaceae authored by five cacti specialists. Richard Spellenberg authored the Nyctaginaceae.

The notes on taxonomy, history of introduced weeds, poisonous plants, cultivation, recent genetic work and reclassifications, and other matters add much useful information, although occasionally one

might question the utility of a particular note. An example of the latter is the mention of Popeye with regard to spinach. Those of us in the older generation who were subjected to this ploy to get us, as children, to eat our spinach readily relate to this, but the younger generations may not even know who Popeye was.

The illustrations are another valuable asset of all the volumes, and those by Jeanne R. Janish are the standard of excellence. Hers are supplemented by those of Bobbi Angell and Laura Vogel which equal or nearly equal the quality of Jeanne's illustrations. The Cactaceae were illustrated by nine different artists, and as one would expect, the quality is variable ranging from excellent to far better than most of us could ever do. They are all satisfactory. It must be a real challenge to illustrate the tangle of spines on some cacti. The real value of the illustrations is that they are a great substitute for a reference collection for confirming the identification of a plant. The illustrations are useful for areas far beyond the Intermountain region.

It is hard to find any typographical or other errors in the volume. I did notice a couple of incomplete range distributions for species. The range for *Stenogonum salsuginosum* did not include nw Wyoming and sc Montana, and for *Eriogonum acaule* did not include nw Wyoming (Teton Co.).

This last volume, being the largest, is also the most expensive but is well worth it. The New York Botanical Garden Press is offering a special deal for all eight volumes at \$520 plus shipping. In essence you get two volumes for free. Visit their website at www.nybgpress.org for ordering information.

Every resource manager in the Intermountain region and adjacent areas should have easy access to this set of volumes if they expect to wisely manage the resources for which they are responsible. Many of those plants which are thought to have little or no value today could become valuable genetic resources in the future. These are not just for resource managers. Biologists, gardeners, nursery owners, landscape architects, and others can learn a lot from these books. Now is a good time to obtain this and other volumes. On slow winter days browse through the pages and learn some plants along with useful information about those plants. This is an excellent way to do independent study in Advanced Plant Taxonomy and to get more out of it than in a formal course.

Growing Native Plants

Part 6. Short Shrubs

By Robert Dorn

Short shrubs are used mostly for ground covers but some have attractive foliage, flowers, or fruits. A sampling follows. To see the plants in color, go to the Society website.

Arctostaphylos uva-ursi, Bearberry, is a slow growing, evergreen, mat forming shrub which can reach about 1 foot high but is usually only a few inches high. The leaves are dark green and shiny and often turn bronze or occasionally reddish in fall and winter. The inconspicuous white to pinkish flowers are only about ¼ inch long. The fruits are berry-like and bright red and remain on the plant until the birds get them. The plants occur naturally in moist woods and thickets in the mountains and foothills. It prefers moist but well drained soil and is tolerant of heat, wind, and salt. It does best in shade or part shade. Small plants are easy to transplant and it is easy to propagate from 6 inch stem cuttings in late summer. Trim the leaves from the lower third, dip ends in rooting hormone, and plant the ends 2 inches deep in peat moss and sand in equal parts. Mist regularly. Keeping them in a mostly closed clear plastic container or covering will help retain humidity. Once rooted (generally 6-8 weeks), put in pots of equal parts sand and loamy soil, mulch heavily, and store in a cold area for the winter. Plant out in the spring minimizing disturbance to the roots. It is also available in the nursery trade.



Arctostaphylos uva-ursi, Albany County

Ceanothus velutinus, Big Buckbrush, is an evergreen shrub to 3 feet (rarely 6 feet) high and often forms large dense colonies. The leaves are fragrant and the upper surface appears like it is varnished. The white flowers are tiny but are aggregated into large, showy clusters at the ends of the branches. It occurs naturally in moist to dry open woods or open areas in the mountains. It requires good drainage in full sun and does not tolerate overwatering nor highly alkaline soils. It can be propagated from 2 or 3 inch branch tip cuttings in late summer dipped in rooting hormone. Provide bottom heat to the pots or flats (70-80° F). Growing from seed is a little tricky. Collect the seed just before the capsules open. Put the capsules into a paper bag immediately. The seeds fly out when the capsule splits. Bring some water to a near boil, turn off the heat, put in the seeds, and leave until the water cools. Then cold stratify for 60 days or more and surface sow. It may take 100 days or more for germination.



Ceanothus velutinus, Carbon County

Juniperus communis, Common Juniper, is a spreading evergreen shrub to 3 feet high and 15 feet across. The leaves are needle-like in whorls of three. Male and female cones are usually on separate plants. The female cones are berry-like, green at first, then becoming blue-black and ripen to blackish in their third year. It occurs naturally in woods and draws and on moist slopes mostly in the mountains but occasionally on the plains and in the basins. It prefers moist, well drained sites with some shade but will grow in full sun and on more dryish sites. In

winter the leaves may get a reddish-bronze tint, especially in full sun. These grow vigorously but can be pruned back. There are several cultivars in the nursery trade, some derived from outside our area. Ours is variety *depressa*. It can also be grown from stem cuttings with a short strip of bark at the base. Small specimens are easily transplanted. Seed requires 60 to 90 days warm stratification followed by 90 days cold stratification. Surface sow to allow light exposure. A shorter creeping juniper, *Juniperus horizontalis*, seldom gets over 6 inches high and is a good ground cover.



Mahonia repens, Albany County



Juniperus communis, Albany County

Mahonia repens, Oregon Grape, is not really a grape but probably gets its common name from the blue fruits resembling a cluster of grapes. It is a creeping evergreen shrub 1 foot tall or less. The leaves resemble a holly and often turn red or bronze during the winter. The yellow flowers are small but in dense clusters in the leaf axils. It occurs naturally in moist, wooded or partly open areas in the mountains and higher basins. It does best in part shade in a moist, well drained soil and can tolerate some drying. It can be grown from rhizome cuttings taken in spring. Seed needs to be cold stratified for 90 days and surface sown but germination may take upto 2 years. It is also in the nursery trade.

Purshia tridentata, Bitterbrush, is a deciduous shrub upto 3 feet high and wide. It has numerous, very fragrant, yellow flowers. It occurs naturally in moist to dry, open woods or on open slopes and meadows in the basins, valleys, and mountains. It prefers full sun or light shade and moist, well drained soil and is drought tolerant. It is difficult to transplant but can be grown from stem cuttings. Seed needs to be cold stratified for 90 days after all extraneous material is removed from the seed.



Purshia tridentata, Platte County

A Pocket Guide to the Native Plants of Teton County, Wyoming

By Rachel Daluge, Teton Conservation District

(Editor's note: *This article describes a small grants educational project awarded by Wyoming Native Plant Society to print the Guide in 2012.*)

Knowing which plants are native and nonnative is essential. Teton Conservation District has created a guide to the native plant species found in Teton County and vicinity to educate landowners how to utilize native plants for landscaping purposes. The species selected for this guide are taken from the Teton County Native Plant Species List, posted at: www.tetonconservation.org. All of the species listed in this guide are native to Wyoming (according to the Natural Resources Conservation Service PLANTS Database, posted at: <http://plants.usda.gov>). They are in Teton County and commercially available as of May 2012, (see www.nativeseednetwork.com).

The guide was created in 2012 to offer pictures and common characteristics associated with species on the list. This list and guide aims to help

provide greater consistency and clarity for those who must meet criteria standards for Teton County development reviews, as well as landowners who want to improve their landscape through the use of native plant species.

Along with a why and how to use native plants section, there are photos and 6 characteristics associated with over 100 species outlined in the pocket guide. The characteristics include growth form, fire resistance, toxicity, drought tolerance, moisture usage, and soil type. Noxious and/or non-native species are not included in this guide in order not to confuse the two categories of plants and to specifically promote the use of, and understanding the importance of native species within Teton County.

If you would like a free copy of the guide please contact (307) 733-2110 or email your request to: Rachel@tetonconservation.org. You may also download a copy at www.tetonconservation.org. We would like to thank the Wyoming Native Plant Society, the Teton County Weed and Pest District, and Conservation Seeding & Restoration Inc. for contributing to this guide.

GLORIA in Wyoming

Jennifer Lyman, Rocky Mountain College, Billings, MT

The Global Observation in Research Initiative in Alpine Environments (GLORIA) has come to Wyoming. Its purpose is to document plant biodiversity trends at a network of sites on mountain ranges world-wide. All researchers use standard methods that will provide high-quality baseline and monitoring data to allow for within and among-site comparisons of plant biodiversity changes over the long-term. The monitoring results from sites around the globe will provide on-the-ground field data to assess alpine ecosystem health (www.gloria.ac.at). The network also encourages international collaboration and information exchange among researchers involved in the GLORIA effort.

The GLORIA-Europe network started with 18 target regions in 13 European countries. The first was in 2001 in Austria. By 2010 there were 91 regions on five continents. In Wyoming, two GLORIA sites have been established in the Beartooth Mountains and in Yellowstone National Park (see next page) and additional sites are under consideration.

The GLORIA study design provides detailed information for scientists to analyze how alpine plant biodiversity changes over time from the summits near tree-line to those at the current altitudinal limit of plant growth. The protocol calls for each team working with the GLORIA project to select four summits in an elevation gradient from near tree-line to the highest extent of plant growth within a given mountain range (Figure 1). This makes it possible to simultaneously compare changes with elevation and aspect, not only within sites but between sites. There are required and optional biotic and abiotic parameters to document (www.gloria.ac.at), centered on vegetation and soils. The protocol for establishing the permanent summit sampling sites and documenting their position for future monitoring teams, involved the use of clinometers, compasses, hand-held GPS, and detailed documentation of plot corners because the sites will be re-sampled every five years.

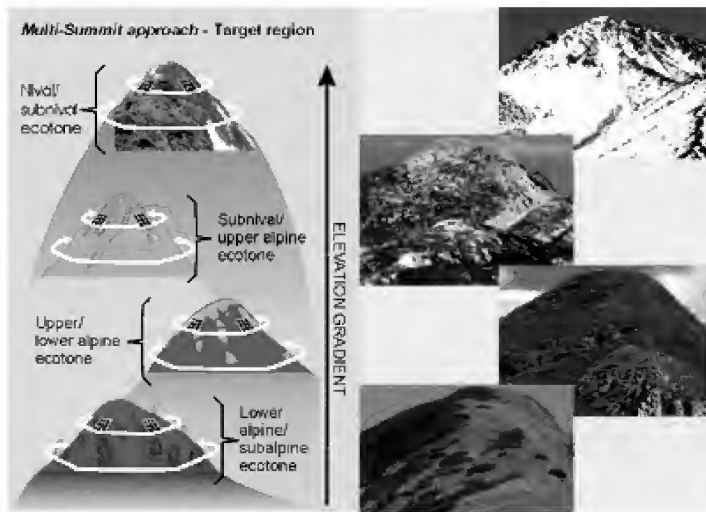


Figure 1. Model for GLORIA monitoring system design

New Alpine Vegetation and Soils Monitoring in Yellowstone National Park

Bernadette Kuhn, Joe Stevens, and Travis Talbot
Colorado Natural Heritage Program, Fort Collins, CO

In 2011, we completed baseline work to monitor vegetation composition, structure, and soils in the alpine of Yellowstone National Park (YELL). The alpine monitoring system following methods of the Global Observation Research Initiative in Alpine Environments (GLORIA) whereby the park became part of an international effort to monitor biodiversity and climate trends in the alpine. GLORIA sentinel sites were established at four unnamed peaks in the upper Lamar River area, northeast of Lamar Mountain. The peaks ranged in elevation from 3195 to 3122 m.

The four peaks have generally stable soils, high vegetation cover, low exotic species cover, and minimal human and herbivore disturbance. There were 98 species of vascular plants identified, including grasses forbs, sedges, shrubs, and a two tree species. In addition, 22 species of lichens were identified between the four peaks.

Climate change and increased atmospheric deposition of nutrients may be the greatest threats to alpine systems in YELL. Continued monitoring of the vegetation and soil temperature at sentinel sites will allow us to determine whether temperature change correlates with changes in biodiversity in the alpine.

New Alpine Vegetation and Soils Monitoring in the Beartooth Mountains

Jennifer Lyman, Rocky Mountain College, Billings, MT

In 2012, after many days of searching for appropriate "summits," building the necessary grids, assembling equipment, and measuring, measuring, measuring, we placed soil temperature loggers 10 cm deep into the alpine turf at four summits in Wyoming's Beartooth Mountains.

These data loggers are part of the protocol required by the Global Observation Research into Alpine Environments (GLORIA) network. The temperature loggers are just 2.5 cm in diameter and 1 cm high. Their flashing red lights indicate that they are active and ready to begin collecting data every hour. In three years their battery life ends. The multi-year record of hourly soil temperatures of the alpine plant rhizosphere will reveal much about the capability for alpine plants to store their carbohydrates and nutrients and mobilize them each spring for a new season of plant growth and reproduction. In three years these temperature loggers will be removed, the soil's temperature data will be downloaded into the GLORIA network database, and new loggers will continue to monitor the soil temperature in this alpine zone.

At each of the four summits the field team temporarily laid out a 3m x 3m array of plastic measuring tape to outline the meter-square sampling plots at five vertical meters below the summit at each of the four cardinal directions. The team botanist used a meter-square sampling grid divided into 100 cells to record substrate characteristics and plant species and their cover for each of the outer four outer one-meter squares (see diagram from the GLORIA website). The soil temperature loggers were inserted in the central one-meter square.

In addition, plant species abundance is recorded using a more simplified method within each of the SE, SW, NE, and NW five meter and ten meter areas below the summits.

While Billings, Montana and the High Plains suffered through the hottest, driest summer in memory, our project team spent a number of cool, refreshing days in some of the most beautiful alpine environments in the country. In fact, one could not have asked for a better place to work.

Halfway Down, Halfway to Go!

This is not a football call but a call to Wyoming photographers. Wyoming Natural Diversity Database is assembling photographs of all plant species of concern to post on-line in state species abstracts next year. Printed below are the 230 species having NO photographs – two are ultimately needed (photo of whole plant with diagnostic characteristics, and species' habitat photo). We are taking other approaches to fill gaps, but want to ensure that Wyoming photographers are the first to hear.

Actually, we welcome photos of all species of concern, to improve quality and fill habitat photo gaps. For common names, synonyms, and full list of plant species of concern, please see the list of tracked and watch plants posted at: (www.uwyo.edu/wyndd/). Digital files are preferred (on CD) but slide loans to scan are also welcome, mailed to: Wyoming Natural Diversity Database, ATTN: B. Heidel, 1000 E. University Ave., Laramie, WY 82071. Questions? Contact 307-766-3020; or bheidel@uwyo.edu. BH

<i>Achnatherum nevadense</i>	<i>Carex misandra</i>	<i>corymbosum</i>	<i>Myriophyllum quitense</i>
<i>Achnatherum scribneri</i>	<i>Carex nelsonii</i>	<i>Eriogonum divaricatum</i>	<i>Myriophyllum verticillatum</i>
<i>Achnatherum swallenii</i>	<i>Carex occidentalis</i>	<i>Eriogonum hookeri</i>	<i>Najas guadalupensis</i>
<i>Agrostis mertensii</i>	<i>Carex propinqua</i>	<i>Eriogonum mancum</i>	<i>Nothocalais troximoides</i>
<i>Agrostis oregonensis</i>	<i>Carex richardsonii</i>	<i>Eriogonum pauciflorum</i> var.	<i>Oenothera canescens</i>
<i>Ammannia robusta</i>	<i>Carex rosea</i>	<i>nebraskense</i>	<i>Oenothera laciniata</i>
<i>Amphicarpaea bracteata</i>	<i>Carex scoparia</i>	<i>Eriogonum umbellatum</i> var.	<i>Onoclea sensibilis</i>
<i>Anemone lyallii</i>	<i>Chamaesyce geyeri</i>	<i>cladophorum</i>	<i>Ophioglossum pusillum</i>
<i>Anemone narcissiflora</i> ssp.	<i>Chenopodium incanum</i> var.	<i>Eriophorum scheuchzeri</i>	<i>Orobancha corymbosa</i> var.
<i>zephyra</i>	<i>incanum</i>	<i>Euphorbia exstipulata</i> var.	<i>corymbosa</i>
<i>Antennaria flagellaris</i>	<i>Chenopodium watsonii</i>	<i>exstipulata</i>	<i>Orobancha ludoviciana</i> var.
<i>Antennaria monocephala</i>	<i>Chrysothamnus Greenei</i>	<i>Euphorbia hexagona</i>	<i>arenosa</i>
<i>Aquilegia brevistyla</i>	<i>Cicuta bulbifera</i>	<i>Euthamia graminifolia</i> var. major	<i>Oxytheca dendroidea</i>
<i>Arceuthobium douglasii</i>	<i>Circaea lutetiana</i> var. canadensis	<i>Gentianella propinqua</i>	<i>Oxytropis besseyi</i> var.
<i>Aristida curtisii</i>	<i>Cirsium barneby</i>	<i>Gentianopsis simplex</i>	<i>obnapiformis</i>
<i>Aristida oligantha</i>	<i>Cirsium canovirens</i>	<i>Helictotrichon mortonianum</i>	<i>Packera crocata</i>
<i>Asclepias engelmanniana</i>	<i>Cirsium foliosum</i>	<i>Hesperochiron californicus</i>	<i>Papaver kluanense</i>
<i>Asclepias hallii</i>	<i>Crassula solieri</i>	<i>Hesperostipa neomexicana</i>	<i>Parnassia kotzebuei</i>
<i>Asclepias subverticillata</i>	<i>Cryptantha gracilis</i>	<i>Heterocodon rariflorus</i>	<i>Paronychia jamesii</i>
<i>Asclepias uncialis</i>	<i>Cuscuta indecora</i> var. neuropetala	<i>Heterotheca pumila</i>	<i>Pedicularis parryi</i> ssp.
<i>Asclepias verticillata</i>	<i>Cuscuta megalocarpa</i>	<i>Hymenopappus tenuifolius</i>	<i>mogollonica</i>
<i>Aster alpinus</i> var. vierhapperi	<i>Cuscuta occidentalis</i>	<i>Ionactis alpina</i>	<i>Pedicularis pulchella</i>
<i>Astragalus bisulcatus</i> var.	<i>Cuscuta plattensis</i>	<i>Ipomopsis polycladon</i>	<i>Pedimelum digitatum</i>
<i>haydenianus</i>	<i>Cymopterus alpinus</i>	<i>Isoetes occidentalis</i>	<i>Pellaea gastonyi</i>
<i>Astragalus coltonii</i> var. moabensis	<i>Cyperus engelmannii</i>	<i>Juncus triglumis</i> var. albescens	<i>Pellaea suksdorfiana</i>
<i>Astragalus leptaleus</i>	<i>Cyperus erythrorhizos</i>	<i>Juncus triglumis</i> var. triglumis	<i>Penstemon cyathophorus</i>
<i>Astragalus platytropis</i>	<i>Dalea cylindriceps</i>	<i>Kelloggia galioides</i>	<i>Penstemon scariosus</i> var. garrettii
<i>Astragalus terminalis</i>	<i>Dalea enneandra</i>	<i>Lathyrus eucosmus</i>	<i>Penstemon watsonii</i>
<i>Atriplex wolfii</i>	<i>Deschampsia danthonioides</i>	<i>Lathyrus lanszwertii</i> var.	<i>Phacelia denticulata</i>
<i>Boechera crandallii</i>	<i>Dichanthelium linearifolium</i>	<i>lanszwertii</i>	<i>Phacelia incana</i>
<i>Boechera perennans</i>	<i>Dodecatheon jeffreyi</i> ssp. jeffreyi	<i>Lechea intermedia</i>	<i>Phlox albomarginata</i>
<i>Boechera selbyi</i>	<i>Draba crassa</i>	<i>Ligusticum tenuifolium</i>	<i>Phlox diffusa</i> ssp. scleranthifolia
<i>Botrychium hesperium</i>	<i>Draba fladnizensis</i> var. pattersonii	<i>Lipocarpa drummondii</i>	<i>Phryma leptostachya</i>
<i>Botrychium lineare</i>	<i>Draba glabella</i>	<i>Listera convallarioides</i>	<i>Physalis virginiana</i> var. virginiana
<i>Botrychium pallidum</i>	<i>Draba spectabilis</i> var. oxyloba	<i>Lithospermum multiflorum</i>	<i>Platanthera orbiculata</i>
<i>Bouteloua simplex</i>	<i>Dulichium arundinaceum</i>	<i>Loeflingia squarrosa</i>	<i>Polemonium micranthum</i>
<i>Braya glabella</i>	<i>Eleocharis flavescens</i> var.	<i>Lomatium bicolor</i> var. bicolor	<i>Polygala verticillata</i>
<i>Bromus pubescens</i>	<i>thermalis</i>	<i>Luzula glabrata</i> var. hitchcockii	<i>Polygonatum biflorum</i>
<i>Calochortus apiculatus</i>	<i>Eleocharis ovata</i>	<i>Lycopus uniflorus</i>	<i>Polygonum spergulariiforme</i>
<i>Campanula aparinoides</i>	<i>Eleocharis parvula</i> var. anachaeta	<i>Lysimachia thyrsiflora</i>	<i>Polystichum scopulinum</i>
<i>Carex concinna</i>	<i>Eleocharis tenuis</i> var. borealis	<i>Lythrum alatum</i> var. alatum	<i>Populus deltoides</i> var. wislizeni
<i>Carex eburnea</i>	<i>Elymus simplex</i> var. simplex	<i>Mentzelia rusbyi</i>	<i>Potamogeton amplifolius</i>
<i>Carex egglestonii</i>	<i>Elymus triticoides</i>	<i>Mentzelia sinuata</i>	<i>Potamogeton diversifolius</i>
<i>Carex flava</i>	<i>Ephedra viridis</i> var. viscida	<i>Mentzelia speciosa</i>	<i>Potamogeton friesii</i>
<i>Carex foenea</i> s.s.	<i>Eragrostis hypnoides</i>	<i>Mimulus nanus</i> ssp. nanus	<i>Potamogeton illinoensis</i>
<i>Carex granularis</i> var. haleana	<i>Erigeron compactus</i> var.	<i>Mimulus rubellus</i>	<i>Potamogeton nodosus</i>
<i>Carex infirmivervia</i>	<i>consimilis</i>	<i>Minuartia filiorum</i>	<i>Potamogeton obtusifolius</i>
<i>Carex laeviculmis</i>	<i>Erigeron elatior</i>	<i>Monarda pectinata</i>	<i>Potamogeton praelongus</i>
<i>Carex lenticularis</i> var. dolia	<i>Erigeron flabellifolius</i>	<i>Montiastrum lineare</i>	<i>Potamogeton robbinsii</i>
<i>Carex luzulina</i> var. atropurpurea	<i>Erigeron pinnatisectus</i>	<i>Muhlenbergia torreyi</i>	<i>Potamogeton strictifolius</i>
	<i>Eriogonum corymbosum</i> var.	<i>Myosotis verna</i>	<i>Potamogeton zosteriformis</i>

<i>Potentilla ambigens</i>	<i>Ranunculus flabellaris</i>	<i>Senecio hydrophiloides</i>	<i>Trautvetteria caroliniensis</i>
<i>Potentilla hyparctica</i>	<i>Ranunculus gelidus</i>	<i>Sesuvium verrucosum</i>	<i>Triodanis holzingeri</i>
<i>Potentilla multisecta</i>	<i>Rorippa truncata</i>	<i>Silene douglasii</i>	<i>Triodanis leptocarpa</i>
<i>Potentilla subjuga</i>	<i>Sagittaria latifolia</i>	<i>Silene kingii</i>	<i>Trisetum canescens</i>
<i>Potentilla uniflora</i>	<i>Sambucus cerulea</i>	<i>Silene repens</i>	<i>Vaccinium myrtillus</i> var.
<i>Prosartes hookeri</i>	<i>Saxifraga serpyllifolia</i> var.	<i>Sisyrinchium idahoense</i> var.	<i>oreophilum</i>
<i>Pseudognaphalium</i>	<i>chrysantha</i>	<i>idahoense</i>	<i>Viola pedatifida</i>
<i>microcephalum</i> var. <i>thermale</i>	<i>Scheuchzeria palustris</i>	<i>Sparganium eurycarpum</i>	
<i>Puccinellia cusickii</i>	<i>Schoenoplectus heterochaetus</i>	<i>Stephanomeria pauciflora</i>	
<i>Pyrrocoma crocea</i> var. <i>crocea</i>	<i>Schoenoplectus saximontanus</i>	<i>Tonestus pygmaeus</i>	
<i>Pyrrocoma integrifolia</i>	<i>Schoenoplectus subterminalis</i>	<i>Torreyochloa pallida</i> var. <i>fernaldii</i>	
<i>Ranunculus aquatilis</i> var. <i>aquatilis</i>	<i>Scolochloa festucacea</i>	<i>Townsendia florifer</i>	

Desert yellowhead, cont. from p. 1

Dorn, Scotts, Fertig and Heidel were digitized to identify gaps in survey, seeking overlooked places by tracing the paths of past searches. Second, all similar sparsely-vegetated erosion settings were identified on aerial photos in the same part of Fremont County that had not been surveyed. Third, new potential distribution models were developed with the benefit of precise population mapping by the Scotts, using all the digitized survey routes as negative data. As a result – a new population was discovered among about 50 areas surveyed in 2010-2011, found by Joy Handley in 2010 (Heidel et al. 2011).

Discovery of a second Desert yellowhead population bodes well for species' viability. It

also adds to the puzzle. The second site has soils and vegetation characteristics that differ as much from the habitat at the first population as both population settings differ from surrounding sagebrush steppe (Heidel et al. 2011). A population viability analysis of both populations is pending based on demographic data results and on prospective replication of previous monitoring by Scotts.

The terms for managing and protecting Desert yellowhead and its habitat have yet to be released in an updated BLM Lander Resource Management Plan. Precise mapping shows that it has no more than a 12 acre roothold in Wyoming. ...It may hold more surprises for botanists, but the plotline is looking up.

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Fertig, W. 1998. Botany Briefs – Desert yellowhead proposed as Threatened. *Castilleja* 17(4): 5.
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A Native Plant Master Program in Wyoming?

Wyoming Native Plant Society members are invited to participate in a survey of the need and interest in a Native Plant Master Program in Wyoming, as developed by Colorado Extension Service, modeled after the Master Gardener Program. It offers an interdisciplinary blend of field and classroom education where participants learn about native plants, their use for sustainable landscaping and ecological restoration, and about invasive weeds that threaten native ecosystems.

The survey is for potential participants, including Master Gardeners, reclamation specialists, land managers, native plant enthusiasts, and anyone who would benefit from learning more about native plants and invasive weeds.

The survey is posted at:

www.surveymonkey.com/s/nativeplantmaster .

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Please note our new address!

Wyoming Native Plant Society is a non-profit organization established in 1981 to encourage the appreciation and conservation of the native plants and plant communities of Wyoming. The Society promotes education and research through its newsletter, field trips, annual student scholarship and small grants awards. Membership is open to individuals, families, or organizations. To join or renew, please return this form. See the return address below.

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Name: _____

Address: _____

Email : _____

- Check one: [☐] New member [☐] Renewing member
[☐] Renewing members, check here if this is an address change.
[☐] Check here if you prefer to receive the newsletter electronically

Membership

- [☐] WYNPS annual membership: \$7.50
[☐] WYNPS annual membership with scholarship support: \$15.00
(\$7.50 for membership and \$7.50 for Scholarship fund)
[☐] WYNPS Lifetime membership: \$200 (\$150 for membership and \$50 for Scholarship fund)
[☐] Sublette Chapter annual membership: \$5.00
[☐] Teton Chapter annual membership: \$5.00

Total enclosed: _____

THANK YOU !

Wyoming Native Plant Society – Renewal and Ballot

Return to: Wyoming Native Plant Society – P.O. Box 2449 – Laramie, WY 82073

2013 WYNPS RENEWAL

Name: _____

Address: _____

Email : _____

Membership

☐ WYNPS annual membership: \$7.50

☐ WYNPS annual membership with scholarship support: \$15.00 (\$7.50 for membership and \$7.50 for Scholarship fund)

☐ WYNPS Lifetime membership: \$200 (\$150 for membership and \$50 for Scholarship fund)

Check one: ☐ New member ☐ Renewing member
☐ Renewing members, check here if this is an address change.

☐ Check here if you prefer to receive the newsletter electronically.

☐ Sublette Chapter annual membership: \$5.00

☐ Teton Chapter annual membership: \$5.00

Total enclosed: _____

THANK YOU !

2013 WYNPS BALLOT – Please mail for receipt by January 21 or email amb749@yahoo.com

Please vote for one person for each office:

President ____ Dorothy Tuthill (Laramie) Secretary/Treasurer ____ Ann Boelter (Laramie)

Vice President ____ Walter Fertig (Kanab, UT) Board (2-year term) ____ Joan Lucas (Jackson)

Write-in candidate and office: _____

[The second Board position is held by Andrew King (Basin), who will start his second year of a two-year term.]

Candidate Biographies

Dorothy Tuthill is current Vice President of WYNPS, and played a key role in last summer's joint annual meeting with the American Penstemon Society. She studied fungi (not plants!) in college, and is currently the associate director of the UW Biodiversity Institute, responsible for K-12 educational programs.

Ann Boelter is current Secretary/Treasurer of WYNPS. She previously worked for the Environment and Natural Resources Program - Ruckelshaus Institute, and the Dept. of Zoology and Physiology at the Red Buttes Environmental Biology Laboratory. She enjoys hiking, camping, skiing and exploring for plants and wildlife.

Walter Fertig was the WYNPS secretary/treasurer and newsletter editor during much of the 1990s and was shamed into running for office by his friends on the WYNPS board. He studied botany at the University of Wyoming and was formerly botanist with the Wyoming Natural Diversity Database. Walter lives in Kanab, UT with his wife Laura Welp Fertig, 2 dogs, and 9 cats.

Joan Lucas is a long time member of the Teton Chapter and WYNPS with an interest in identifying, propagating and landscaping with native plants. She is also an avid hiker and field trip fan.



Wyoming Native Plant Society

2013 MARKOW SCHOLARSHIP/SMALL GRANT

Applications are due 15 February 2013. Awards will be made in April, 2013.

Electronic copies of the applications are also posted on the WNPS homepage at: www.uwyo.edu/wyndd/wnps

The Wyoming Native Plant Society promotes appreciation, understanding and conservation of native plants and plant communities through its annual scholarship/small grants program. Thesis research may address any aspect of botany, including floristics, taxonomy, ecology, genetics, plant geography, range science, paleontology, pollination biology, physiology, and mycology. *In addition, other projects like botany curriculum development, public native plant gardens, and other forms of research will be considered.*

Scholarship or small grant proposals must pertain to native plants of Wyoming. Preference will be given to proposals expected to generate research data or promote public understanding. Up to \$1,000 of expenses may be covered per proposal. *Awards defray direct project costs, excluding labor or conferences.* Eligible expenses include:

- 1) Direct costs of travel, meals, and lodging for carrying out research or education projects.
- 2) Supply and service expenses used for the sole purpose of the project (e.g., consumable supplies such as laboratory chemicals, soil and nursery stock, and services such as phone and computer time).

The deadline for proposals is February 15. The grant competition is open to residents of Wyoming or members of WYNPS. **Scholarships/small grants will be announced in April.**

The grant proposal should be no longer than two pages and should include the following information:

- Contact person and organizational affiliation, as appropriate
- Mailing address, telephone number, and E-mail
- Short abstract of the study or project (2-5 sentences)
- Description of the study or project: objectives, methods, description of final product, and short description of past similar work (if applicable)
- Description of how the study or project will benefit native plant conservation in Wyoming
- Overall budget showing amount requested from WNPS (\$1,000 or less) and the intended purpose of the funding, as well as other funding sources
- Time frames for completion of the study or project
- Brief statement of applicant's qualifications or biography
- Name, address, email address or phone number of two people as references

Successful scholarship or grant applicants will be required to submit a final report documenting the study or project accomplishments to WYNPS, suitable for publication in the *Castilleja* newsletter, along with an accounting of how the funds were used.

Please send completed applications to:

Wyoming Native Plant Society, P.O. Box 2449, Laramie, WY 82073; or amb749@yahoo.com.